

Recent Vertex Beam Test Activities

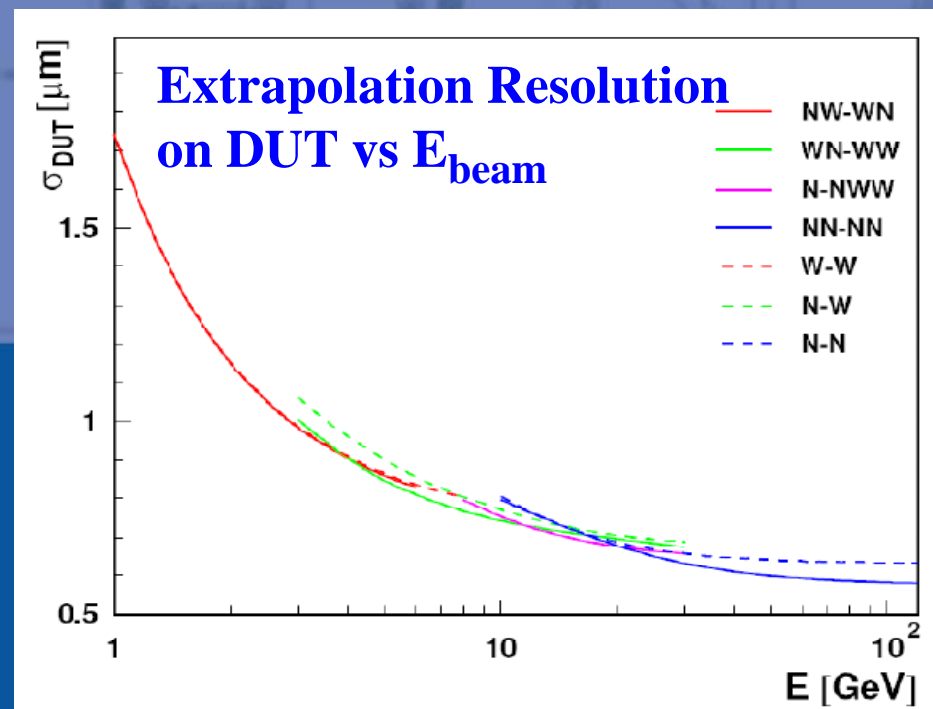
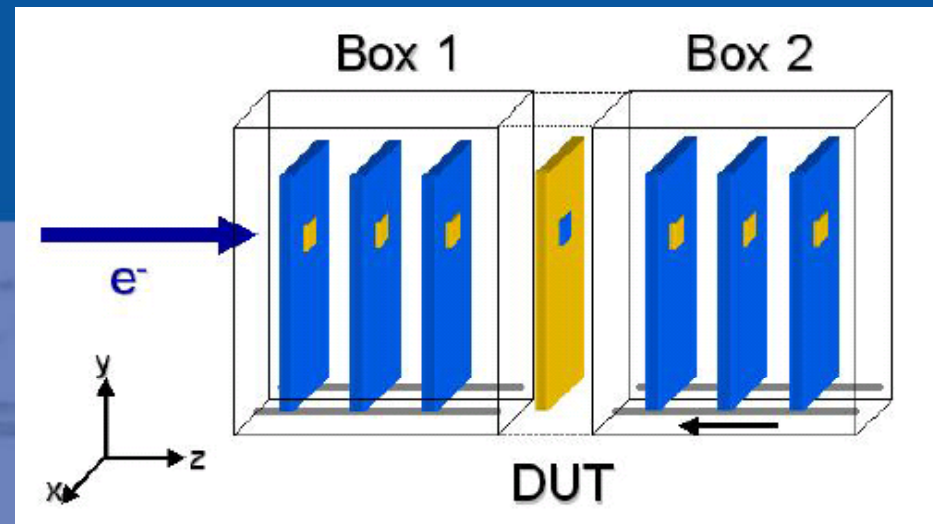


Marco Battaglia
UC Berkeley and LBNL

ALCPG07, Fermilab, October 2007

EUDET JRA-1 Pixel Telescope

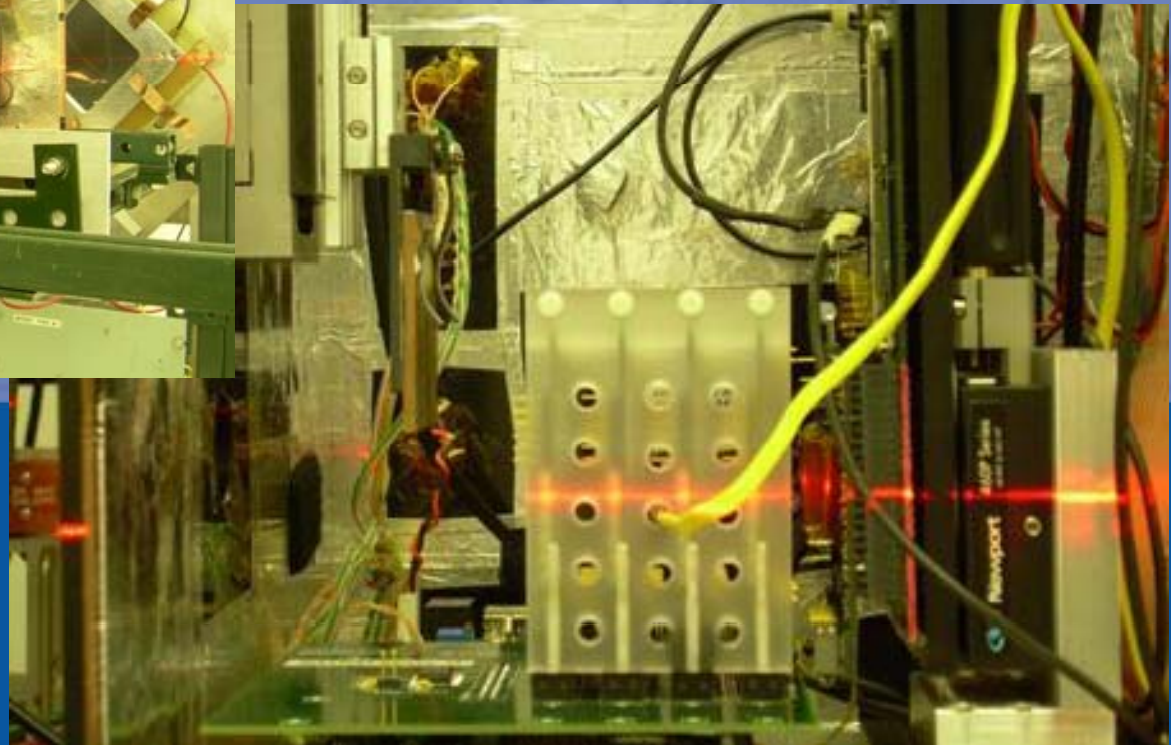
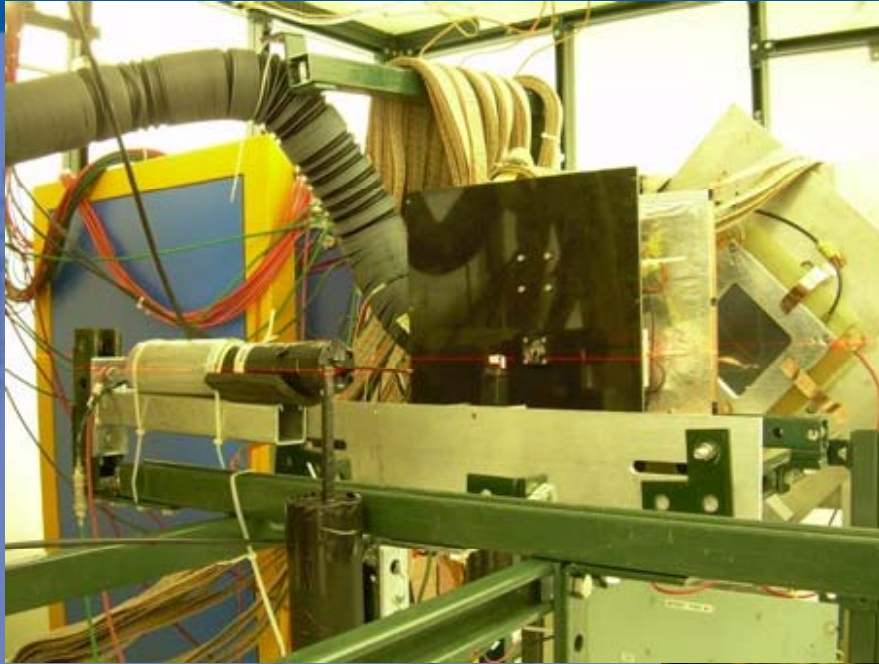
EUDET telescope installed and currently being commissioned on DESY beamline with 6 GeV/c electrons;



	Demonstrator	Final
Area (mm ²)	7.68x7.68	20.48x10.24
Frame r/o	1.6ms	100 μ s
Chip	Analog, col //	Digital, in-pixel CDS

T966 Tracking and Vertexing at MTest

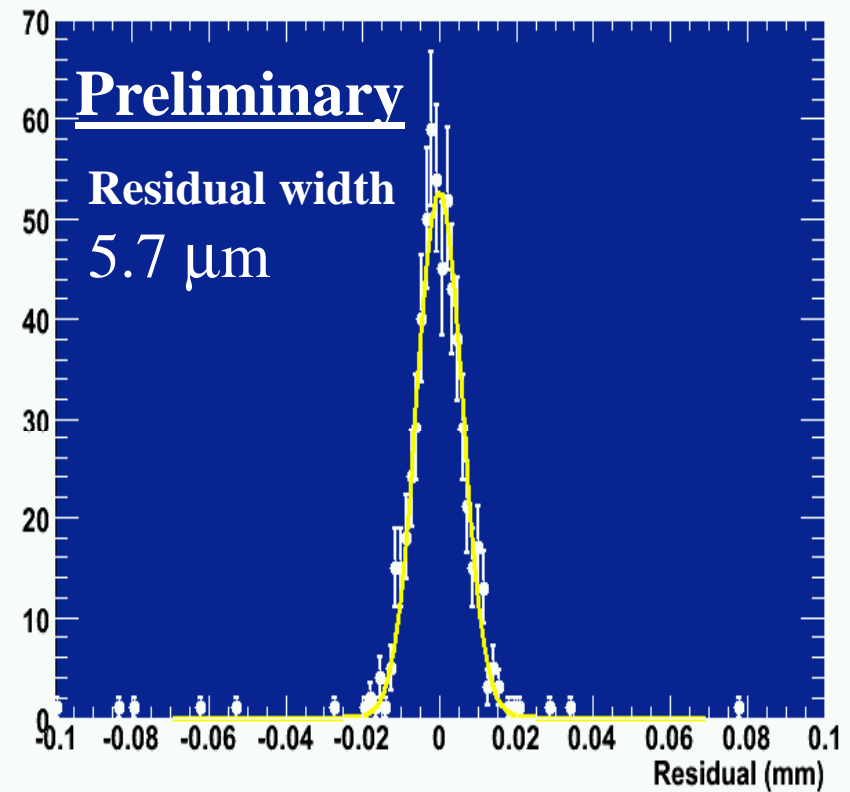
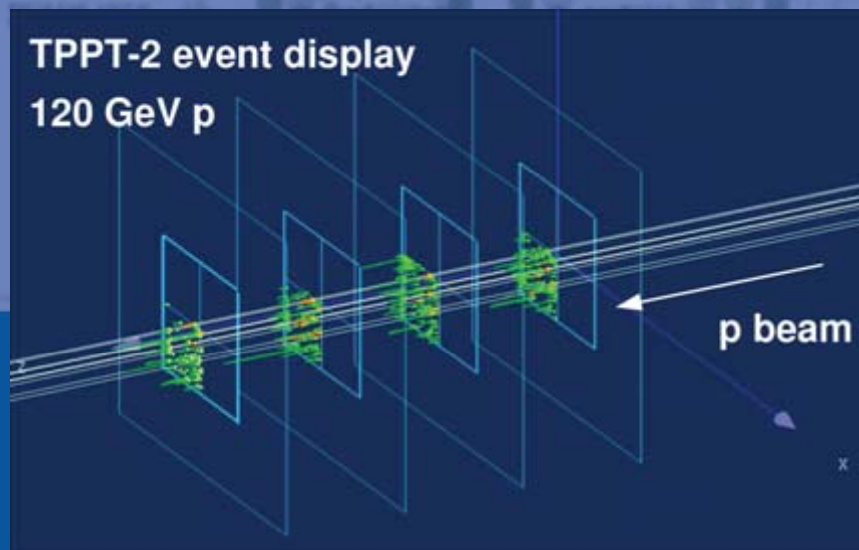
Installed 4 layer 50 μm thin pixel telescope + DUT on MTest and took data for two weeks in June and July 2007;



T966 Tracking and Vertexing at MTest

Data taking with 120 GeV p with standalone telescope, DUT and 4 mm target in front of telescope;

Significant day/night temperature gradient, need repeat sw alignment daily, alignment being finalised:



Fermilab Pixel Telescope at MTest

Beam telescope based on BTeV hybrid pixel sensors to be installed on MTest beamline in upstream station;

Bump bonded detectors to be available by early 2008, plan installation and commissioning in Spring

Expected extrapolation resolution on DUT $\sim 10 \mu\text{m}$

Plan to add one layer of $50 \mu\text{m}$ thin CMOS pixel sensor ($17 \times 17 \mu\text{m}^2$ pixels) to improve resolution on DUT to $\sim 3 \mu\text{m}$ possibly test run in Summer 2008 in coincidence with next T966 run.

ILCSlice Discussion

Informal discussion started on coordinated setup of Vertex Tracker, Main Tracker and Calorimeter prototypes on MTest beamline;

Installation of CALICE at MTest, operation of FNAL beam telescope, experience with T966 would offer interesting starting platform;

ILCSlice beam test would offer excellent opportunity to understand particle/"jet" reconstruction in ILC-like geometry and to validate simulation and reconstruction software.

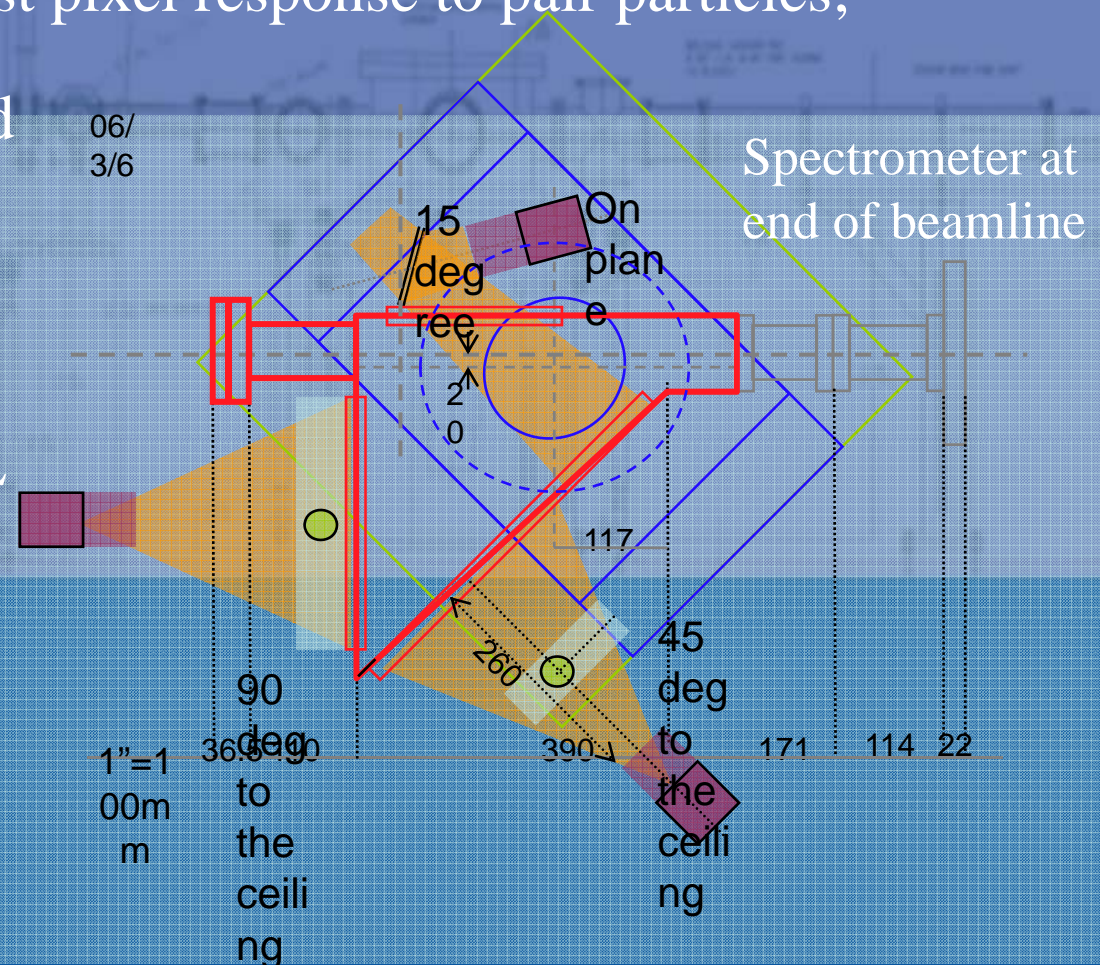
LBNL LOASIS

Laser Wakefield accelerator facility provides e- beams with $10 \text{ MeV} < E < 1 \text{ GeV}$;

Interesting opportunity to test pixel response to pair particles;

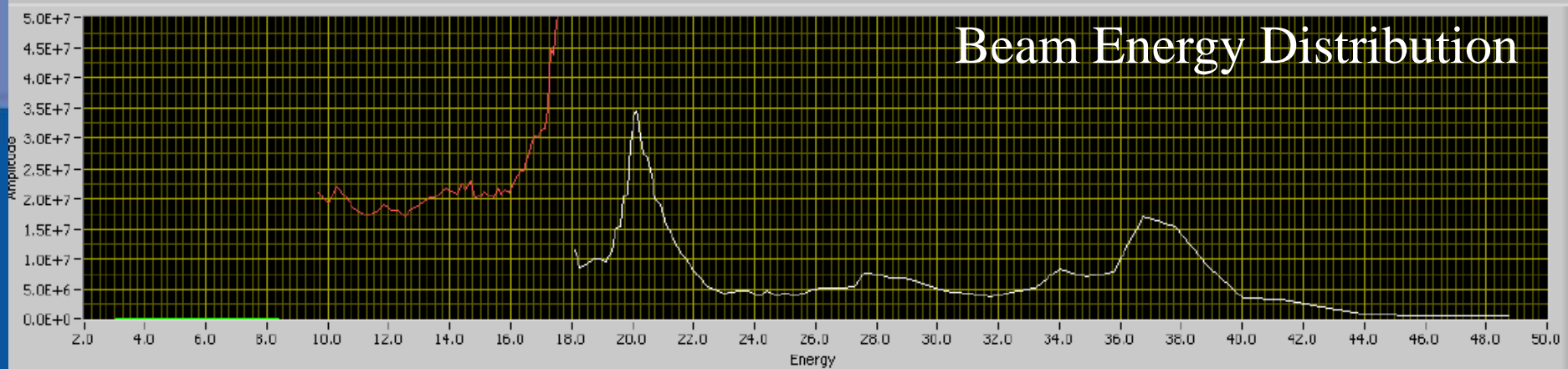
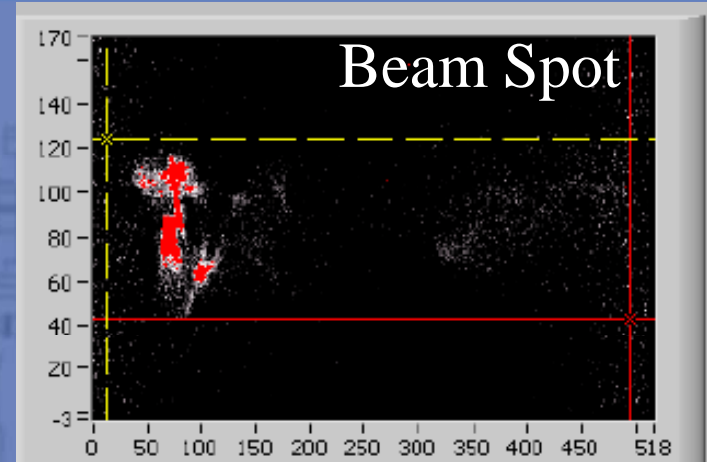
Large charge accelerated and significant beam, X ray and laser backgrounds make use for beam test still difficult;

Submitted request for LBNL Strategic funding to setup dedicated test facility at exit of magnetic Spectrometer: dedicated beamline w/ defocusing quad + detector cold box.



LBNL LOASIS

Example of
200 pC charge accelerated at LOASIS
from August 2006 Run



E (MeV)

SUMMARY

Several beam telescopes becoming available for beam tests on beams over large momentum range;

Both DESY and FNAL beam lines to be equipped with telescopes available to external users;

Proposal submitted for dedicated beamline and permanent detector test facility on LOASIS for low momentum energy tests;

Started considering an ILC Slice beam test including vertex tracker to study particle and "jet" reconstruction under realistic conditions;